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Conference Abstract

Integrating Marine Omics into the Marine Biodiversity Observation Network (MBON) in Support of the UN Sustainable Development Goals (SDG) and Agenda 2030

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Abstract

Life on Earth, including humanity, is tightly and inextricably intertwined with the environment. In a concerted effort to promote the well-being and dignity of humanity, while conserving and protecting the environment, the United Nations Resolution developed a series of targets in what is officially known as ***Transforming our world: the 2030 Agenda for Sustainable Development*** (UN Resolution A/RES/70/1 of 25 September 2015). This agenda lays out 17 ambitious "Global Goals" with a total of 169 targets that promote capacity building, eradication of poverty, and management practices that sustain the growing need for resources. There are specific targets outlined for marine resource conservation and use in Sustainable Development Goal 14 (SDG 14). These goals seek to guarantee benefits that humans derive from the variety, abundance, and biomass of marine species, and from the diverse interactions between these organisms and the marine environment.

Sustainability goals are reflected in ocean policies that mandate integrated, ecosystem-based approaches to marine monitoring. This, in turn, drives a global need for efficient, low-cost bioindicators of marine ecological quality. However, most traditional assessment methods rely on specialized expertise to visually identify a limited set of organisms – a process that it is labor-intensive, slow, and can provide a narrow view of ecological status. Advances in gene-sequencing technology offer an opportunity for improvement. Molecular-based assessments of biodiversity and ecosystem function offer advantages over traditional methods and are increasingly being generated for a suite of taxa – ranging from the microbiome fish and marine mammals.

‘Omic approaches are being implemented in the Marine Biodiversity Observation Network (MBON). MBON is under the umbrella of the Group On Earth Observations Biodiversity Observation Network (GEO BON). The objective of the MBON is to define practical indices that can be deployed in an operational manner to track changes in the number of marine species, the abundance and biomass of marine organisms, the diverse interactions between organisms and the environment, and the variability and change of specific habitats of interest. The goal is to characterize diversity of life at the genetic, species, and ecosystem levels using a broad array of in situ and remote sensing observations. A goal of MBON is to advance practical and wide use of environmental DNA (eDNA) applications to address the need to evaluate status and trends of life in coastal and pelagic environments.

MBON activities address a number of SDG 14 targets, including those related to conservation and sustainable management of marine and coastal ecosystems, impacts of ocean acidification, sustainable use of resources, and capacity building. MBON groups are actively engaged at the national and international level to enable the widespread observation of marine life using standardized methods and data management protocols, building on existing capacity and infrastructure. Specifically, collaborations with programs such as the Global Ocean Observing System (GOOS), OBIS, the Global Ocean Acidification Observation Network (GOA ON), and various regional Biodiversity Observation Networks. The MBON projects seek to establish a community of practice built around common tools and goals.

Keywords

M-BON, biodiversity

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